

## CLAIMS

I/We claim:

- [c1]           1.     A cab portion for an aircraft, comprising:  
an external flow surface having a generally rounded nose portion with a forward extremity, the external flow surface further having a windshield aperture positioned only above and aft of the forward extremity of the rounded nose portion; and  
a windshield disposed in the windshield aperture, wherein a contour of the external flow surface and the windshield extending from a position on the external flow surface beneath the windshield, aft over the windshield to a position on the external flow surface aft of and above the windshield has a generally continuously smooth, unknicked shape.
- [c2]           2.     The cab portion of claim 1 wherein the contour of the external flow surface and the windshield intersects a generally vertical plane passing through the external flow surface and the windshield.
- [c3]           3.     The cab portion of claim 1 wherein the contour of the external flow surface and the windshield intersects a generally vertical plane passing through the external flow surface and the windshield, and wherein a portion of the contour corresponding to the windshield is convex when viewed from a position external to the external flow surface.
- [c4]           4.     The cab portion of claim 1 wherein the contour of the external flow surface and the windshield intersects a generally vertical plane passing through the external flow surface and the windshield at a longitudinal centerline of the cab portion.

- [c5]            5.        The cab portion of claim 1 wherein the contour of the external flow surface and the windshield is a first contour intersecting a generally vertical plane passing through the external flow surface and the windshield at a longitudinal centerline of the cab portion, and wherein a second contour of the external flow surface and the windshield intersecting a generally horizontal plane passing through the external flow surface and the windshield and extending aft over the windshield to a position on the external flow surface aft of the windshield has a generally continuously smooth, unkinked shape.
- [c6]            6.        The cab portion of claim 1 wherein the windshield has a generally conical shape.
- [c7]            7.        The cab portion of claim 1 wherein an external surface of the windshield forms a portion of a conical surface.
- [c8]            8.        The cab portion of claim 1 wherein the contour is defined by an intersection between:  
                 a plane oriented at one of any angle from vertical to horizontal; and  
                 both the external flow surface and the windshield.
- [c9]            9.        The cab portion of claim 1, further comprising a radar positioned within the external flow surface.
- [c10]           10.       The cab portion of claim 1 wherein the external flow surface is shaped for cruise flight at a subsonic Mach number of at least 0.85.
- [c11]           11.       The cab portion of claim 1 wherein the external flow surface is shaped for cruise flight at a subsonic Mach number of from about 0.85 to about 0.98.

- [c12]            12.    The cab portion of claim 1 wherein the windshield includes a single panel extending across a generally vertical plane passing through a longitudinal centerline of the external flow surface.
- [c13]            13.    The cab portion of claim 1 wherein the windshield includes a plurality of panels extending aft from a generally vertical plane passing through a longitudinal centerline of the external flow surface.
- [c14]            14.    The cab portion of claim 1 wherein the contour is generally smooth, continuous and unkinked at a first joint between a lower edge of the windshield and the external flow surface, and at a second joint between an upper edge of the windshield and the external flow surface.
- [c15]            15.    The cab portion of claim 1, further comprising a crew station disposed within the external flow surface, the crew station including aircraft controls.
- [c16]            16.    An aircraft, comprising:  
a wing portion;  
a fuselage portion coupled to the wing portion, the fuselage portion including a cab portion, the cab portion including:  
an external flow surface having a generally rounded nose portion with a forward extremity, the external flow surface further having a windshield aperture positioned only above and aft of the forward extremity of the rounded nose portion; and  
a windshield disposed in the windshield aperture, wherein a contour of the external flow surface and the windshield extending from a position on the external flow surface beneath the windshield, aft over the windshield to a position on the external flow surface aft of and above the windshield has a generally continuously smooth, unkinked shape;

landing gear depending from at least one of the wing portion and the fuselage portion; and  
a propulsion system.

[c17] 17. The aircraft of claim 16 wherein the propulsion system includes at least one turbofan engine.

[c18] 18. The aircraft of claim 16 wherein the fuselage portion has a waisted cross-sectional shape including a first region having a first cross-sectional area, a second region aft of the first region having a second cross-sectional area smaller than the first cross-sectional area, and a third region aft of the second region having a third cross-sectional area greater than the second cross-sectional area.

[c19] 19. The aircraft of claim 16, further comprising a canard depending from the fuselage portion.

[c20] 20. The aircraft of claim 16 wherein the wing portion, the fuselage portion and the propulsion system are shaped and configured for cruise flight at a subsonic Mach number of at least 0.85.

[c21] 21. The aircraft of claim 16 wherein the fuselage portion houses a pressurized passenger cabin.

[c22] 22. A cab portion for an aircraft, comprising:  
an external flow surface having a generally rounded nose portion with a forward extremity, the external flow surface further having a windshield aperture positioned only above and aft of the forward extremity of the rounded nose portion, the external flow surface being shaped for cruise flight at a subsonic Mach number of at least 0.85; and

a windshield disposed in the windshield aperture, wherein a first contour of the external flow surface and the windshield intersecting a generally vertical plane passing through the external flow surface and the windshield extends from a position on the external flow surface beneath the windshield, aft over the windshield to a position on the external flow surface aft of and above the windshield and has a generally continuously smooth, unkinked shape, and wherein a second contour of the external flow surface and the windshield intersecting a generally horizontal plane passing through the external flow surface and the windshield extends aft over the windshield to a position on the external surface aft of the windshield and has a generally continuously smooth, unkinked shape.

[c23]            23.    The cab portion of claim 22 wherein a portion of the first contour corresponding to the windshield is convex when viewed from a position external to the external flow surface.

[c24]            24.    The cab portion of claim 22 wherein an external surface of the windshield forms a portion of a conical surface.

[c25]            25.    The cab portion of claim 22 wherein the first contour is generally smooth, continuous and unkinked at a first joint between a lower edge of the windshield and the external surface, and at a second joint between an upper edge of the windshield and the external surface.

[c26]            26.    The cab portion of claim 22, further comprising a crew station disposed within the external flow surface, the crew station including aircraft controls.

- [c27]           27.     A method for manufacturing an aircraft system, comprising:  
fabricating an external flow surface having a generally rounded nose portion  
with a forward extremity and a windshield aperture positioned above  
and aft of the forward extremity of the rounded nose portion; and  
positioning a windshield in the windshield aperture, with a contour of the  
external flow surface and the windshield extending from a position on  
the external flow surface beneath the windshield, aft over the  
windshield to a position on the external flow surface aft of and above  
the windshield having a generally continuously smooth and unkinked  
shape.
- [c28]           28.     The method of claim 27 wherein positioning the windshield includes  
positioning the windshield so that the contour of the external flow surface and the  
windshield intersects a generally vertical plane passing through the external flow  
surface and the windshield.
- [c29]           29.     The method of claim 27 wherein positioning the windshield includes  
positioning the windshield so that the contour of the external flow surface and the  
windshield intersects a generally vertical plane passing through the external flow  
surface and the windshield at a longitudinal centerline of the cab portion.
- [c30]           30.     The method of claim 27 wherein the contour of the external flow  
surface and the windshield is a first contour and wherein positioning the windshield  
includes positioning the windshield so that the first contour intersects a generally  
vertical plane passing through the external flow surface and the windshield at a  
longitudinal centerline of the cab portion, and wherein positioning the windshield  
includes positioning the windshield so that a second contour of the external flow  
surface and the windshield intersecting a generally horizontal plane passing  
through the external flow surface and the windshield and extending aft over the  
windshield to a position on the external flow surface aft of the windshield has a  
generally continuously smooth, unkinked shape.

- [c31]            31.    The method of claim 27 wherein positioning a windshield includes positioning a windshield having an external surface that forms a portion of a conical surface.
- [c32]            32.    The method of claim 27 wherein positioning the windshield includes positioning the windshield so that the contour is defined by an intersection between:
- a plane oriented at one of any angle from vertical to horizontal; and
- both the external flow surface and the windshield.
- [c33]            33.    The method of claim 27, further comprising disposing a radar within the external flow surface.
- [c34]            34.    The method of claim 27, further comprising shaping the external flow surface for cruise flight at a subsonic Mach number of at least 0.85.
- [c35]            35.    The method of claim 27, further comprising shaping the external flow surface for cruise flight at a subsonic Mach number of from about 0.85 to about 0.98.
- [c36]            36.    The method of claim 27 wherein positioning the windshield includes positioning a single panel extending across a generally vertical plane passing through a longitudinal centerline of the external flow surface.
- [c37]            37.    The method of claim 27 wherein positioning the windshield includes a positioning a plurality of panels extending aft from a generally vertical plane passing through a longitudinal centerline of the external flow surface.
- [c38]            38.    The method of claim 27 wherein positioning the windshield includes positioning the windshield so that the contour is generally smooth, continuous and unkinked at a first joint between a lower edge of the windshield and the external

surface, and at a second joint between an upper edge of the windshield and the external surface.

[c39]            39.    The method of claim 27, further comprising disposing a crew station within the external flow surface, the crew station including aircraft controls.

[c40]            40.    The method of claim 27 wherein the external flow surface includes an external flow surface of an aircraft cab portion, and wherein the method further comprises:

coupling the cab portion to a fuselage portion housing a passenger cabin;  
coupling a wing portion to at least one of the fuselage portion and the cab portion; and  
coupling a propulsion system to at least one of the wing portion and the fuselage portion.